

WHAT IS CLAIMED IS:

1. A liquid crystal display device for displaying by controlling the orientation of a liquid crystal by means of a plurality of pixel  
5 electrodes formed for each pixel and an opposing electrode disposed to oppose the plurality of pixel electrodes with the liquid crystal therebetween, comprising:

an orientation divider for dividing an orientation direction of the liquid crystal in a single pixel into a plurality of  
10 directions; and

a light-shielding film which is disposed to overlap with boundaries of the orientation directions of the liquid crystal formed by the orientation divider.

15 2. A liquid crystal display device according to claim 1, wherein:

the liquid crystal is sealed between a first substrate and a second substrate which are disposed so as to oppose each other;

the first substrate has gate signal lines, drain signal lines, and switching elements connected to the gate signal lines and the  
20 drain signal lines;

the pixel electrodes are connected to the switching elements; and

the opposing electrode is formed on the second substrate to oppose the liquid crystal.

the orientation divider divides the orientation direction of the

liquid crystal by generating an electric field which is inclined with respect to the normal line of the pixel electrode and/or the opposing electrode.

5    4.    A liquid crystal display device according to claim 2, wherein:  
the orientation divider is an orientation control window which is formed by forming an opening in the opposing electrode at a position to overlap with the pixel electrode of the opposing electrode; and

10        the orientation divider divides the orientation direction of the liquid crystal by generating an electric field inclined with respect to the normal line of the pixel electrode and/or the opposing electrode.

15    5.    A liquid crystal display device according to claim 4, wherein the light-shielding film is the drain signal line.

6.    A liquid crystal display device according to claim 4, further comprising:

20        a storage capacitor electrode for forming a storage capacitor, which is electrically connected in parallel to the liquid crystal, on each pixel, wherein:

the light-shielding film is the storage capacitor electrode.

to overlap with the pixel electrode; and

the orientation divider divides the orientation direction of the liquid crystal by generating an electric field inclined with respect to the normal line of the pixel electrode and/or the opposing electrode.

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8. A liquid crystal display device according to claim 7, wherein the orientation control slope is formed by having a projection which is made of an insulating material and formed between a liquid crystal layer and the pixel electrode and/or between the liquid  
10 crystal layer and the opposing electrode.

9. A liquid crystal display device according to claim 7, wherein the orientation control slope is formed by having a projection which is made of an insulating material and formed between the pixel  
15 electrode and the first substrate and/or between the opposing electrode and the second substrate.

10. A liquid crystal display device according to claim 1, wherein the liquid crystal has a negative anisotropy of dielectric constant,  
20 and a vertical orientation film is formed to cover the pixel electrodes.

11. A liquid crystal display device according to claim 10, wherein the orientation divider has a width different from that of the  
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12. A liquid crystal display device according to claim 1, wherein:

the pixel electrodes are disposed in a matrix;

the drain signal lines are connected to a plurality of pixel electrodes in the same column via the switching elements; and

the pixel electrodes, which are connected to the same drain  
5 signal line and positioned in the mutually adjacent rows, are  
disposed to displace by a distance corresponding to about 1.5 pixels  
or smaller in a direction that the gate signal lines are extended.

13. A liquid crystal display device according to claim 12, wherein  
10 the pixel electrodes positioned on the adjacent rows are disposed  
to displace by about 1.2 pixels from each other.

14. A liquid crystal display device according to claim 12, wherein  
the pixel electrodes connected to the same drain signal line have  
15 a corresponding color filter of the same color.

15. A liquid crystal display device for displaying by controlling  
the orientation of a liquid crystal by means of a plurality of pixel  
electrodes formed for each pixel and an opposing electrode disposed  
20 to oppose the plurality of pixel electrodes with the liquid crystal  
therebetween, comprising:

an orientation divider for dividing an orientation direction  
of the liquid crystal in a single pixel into a plurality of  
directions; and

divider, the light-shielding film being a conductive material.

16. A liquid crystal display device according to claim 15,  
wherein:

the liquid crystal is sealed between a first substrate and  
a second substrate which are disposed so as to oppose each other;

5 the first substrate has gate signal lines, drain signal lines,  
and switching elements connected to the gate signal lines and the  
drain signal lines;

the pixel electrodes are connected to the switching elements;  
and

10 the opposing electrode is formed on the second substrate to  
oppose the liquid crystal.

17. A liquid crystal display device according to claim 16, wherein  
the light-shielding film is the drain signal line.

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18. A liquid crystal display device according to claim 15, further  
comprising:

a storage capacitor electrode for forming a storage capacitor,  
which is electrically connected in parallel to the liquid crystal,

20 on each pixel, wherein:

the light-shielding film is the storage capacitor electrode.

19. A liquid crystal display device according to claim 15, wherein  
the liquid crystal has a negative anisotropy of dielectric constant,

20. A liquid crystal display device according to claim 19, wherein the orientation diver has a width different from that of the light-shielding film.

5 21. A liquid crystal display device according to claims 16, wherein:

the pixel electrodes are disposed in a matrix;

the drain signal lines are connected to a plurality of pixel electrodes in the same column via the switching elements; and

10 the pixel electrodes, which are connected to the same drain signal line and positioned in the mutually adjacent rows, are disposed to displace by a distance corresponding to about 1.5 pixels or smaller in a direction that the gate signal lines are extended.

15 22. A liquid crystal display device according to claim 21, wherein the pixel electrodes positioned on the adjacent rows are disposed to displace by about 1.2 pixels from each other.

20 23. A liquid crystal display device according to claim 21, wherein the pixel electrodes connected to the same drain signal line have a corresponding color filter of the same color.

24. A liquid crystal display device, characterized in that:

liquid crystal is sealed between a first substrate and a second

signal lines and drain signal lines, pixel electrodes which are

connected to the switching elements and made of a conductive material and a vertical orientation film for orienting the liquid crystal;

the second substrate has an opposing electrode which has  
5 orientation control windows at positions overlapping with the pixel electrodes to control the orientation of the liquid crystal and a vertical orientation film for orienting the liquid crystal; and

the drain signal lines are disposed on the first substrate  
10 at positions that overlap with the orientation control windows.

25. A liquid crystal display device according to claim 24, wherein the orientation control window has a width different from that of the drain signal line overlapping with the orientation control  
15 window.

26. A liquid crystal display device according to claim 24, wherein:

the pixel electrodes are disposed in a matrix;

20 the drain signal lines are connected to a plurality of pixel electrodes in the same column via the switching elements; and

the pixel electrodes, which are connected to the same drain signal line and positioned in the mutually adjacent rows, are disposed to displace by a distance corresponding to about 1.5 pixels

27. A liquid crystal display device according to claim 26, wherein

the pixel electrodes positioned on the adjacent rows are disposed to displace by about 1.2 pixels from each other.

28. A liquid crystal display device according to claim 26, wherein  
5 the pixel electrodes connected to the same drain signal line have a corresponding color filter of the same color.

29. A liquid crystal display device, characterized in that:  
a liquid crystal sealed is between a first substrate and a  
10 second substrate which are disposed so as to oppose each other;  
the first substrate has gate signal lines, drain signal lines, switching elements connected to the gate signal lines and the drain signal lines, pixel electrodes connected to the switching elements and made of a conductive material, storage capacitor signal lines  
15 for forming storage capacitors with semiconductor layers of the switching elements, and a vertical orientation film for orienting the liquid crystal;

the second substrate has an opposing electrode which controls the orientation of the liquid crystal and has orientation control  
20 windows at positions that overlap with the pixel electrodes and a vertical orientation film for orienting the liquid crystal; and

a part of the gate signal lines, a part of the storage capacitor signal line and the drain signal lines are disposed on the first substrate at positions that overlap with the orientation control

30. A liquid crystal display device according to claim 29, wherein



the orientation control window has a width different from that of the signal line overlapping with the orientation control window.

31. A liquid crystal display device according to claim 29,

5 wherein:

the pixel electrodes are disposed in a matrix;

the drain signal lines are connected to a plurality of pixel electrodes in the same column via the switching elements; and

10 the pixel electrodes, which are connected to the same drain signal line and positioned in the mutually adjacent rows, are disposed to displace by a distance corresponding to about 1.5 pixels or smaller in a direction that the gate signal lines are extended.

32. A liquid crystal display device according to claim 31, wherein

15 the pixel electrodes positioned on the adjacent rows are isposed to displace by about 1.2 pixels from each other.

33. A liquid crystal display device according to claim 31, wherein

20 the pixel electrodes connected to the same drain signal line have a corresponding color filter of the same color.

34. A liquid crystal display device for displaying by controlling the orientation of a liquid crystal of each pixel by means of a plurality of pixel electrodes formed for respective pixels and an

an orientation divider for forming a boundary in the

orientation direction of the liquid crystal in a single pixel; and

a light-shielding film which is disposed so that at least a part of it is arranged through the pixel electrode region so to overlap with the boundary in the orientation direction of the liquid  
5 crystal.

35. A liquid crystal display device according to claim 34, wherein the light-shielding film is a drain signal line for supplying the switching element disposed for each pixel with a display signal  
10 in order to control the orientation of the liquid crystal for each pixel.

36. A liquid crystal display device according to claim 35, wherein:

15 a plurality of pixels are disposed as a matrix and corresponded with any of red, green, and blue colors to be displayed;

the pixels having the same color are displaced from each other in a direction of the row between the adjacent rows; and

the drain signal line is extended in a direction of the column  
20 in a zigzag form so to overlap with at least a part of the boundary in the orientation direction of the liquid crystal formed in the pixel electrode region of the pixels with the same color displaced in the respective rows and supplies the pixels of the same color with a display signal through the switching element.

the drain signal line is bent to extend in a direction of the column

so to cross the one and same pixel electrode region a plurality of times.